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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/812,064

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Shinichi Nagaoka

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SUGHRUE MION, PLLC
2100 PENNSYLVANIA AVENUE, N.W.
SUITE 800
WASHINGTON, DC 20037

EXAMINER

HEITBRINK, JILL LYNNE

ART UNIT

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/812,064	Applicant(s) NAGAOKA ET AL.	
	Examiner Jill L. Heitbrink	Art Unit 1791	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 June 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,5 and 7-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,5 and 7-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
2. Claims 13 and 14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
3. Claims 13 and 14 are unclear and indefinite since resin product design parameters are not control parameters but are related to the product design i.e. material, size and shape of product, and would not be capable of controlling the molding device.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.
5. Claims 1, 5 and 7-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rebello et al. Pub. No. 2003/0149498 in view of Wilson Pat. No. 6,558,605 taken together with either Yu et al. Pat. No. 6,096,088 or Friedl et al. Pat. No. 6,816,820 in view of Norton Pat. No. 6,454,973.
6. Rebello discloses a re-engineering of a part which is injection molded [0058]. Rebello [0020] is used for upgrades which are structurally dissimilar in shape and

material characteristics. The clamping force is one of the process parameters which is converged (optimized) in an analysis model using finite element methodology [0065].

When the tooling analysis data is deemed unsatisfactory the tooling geometry is modified. It would have been obvious to a person of ordinary skill in the art that the tooling geometry modification would have been determining a re-design of the product since this is redesigning the tool which forms the product.

7. Wilson (col. 8, lines 13-22) teaches a process determining the time sequence of the injection molding operation empirically by well known conventional mold fill analyses. Wilson (col. 7, lines 18-24 and claim 1) discusses the controller 68 for the valve gate timing. Wilson (col. 1, lines 18-38) describes the changing of the bumper fascia and changing the thickness of the walls which affect the filling of the mold, and the advantage of using design software to help determine the optimum conditions.

Wilson discloses the known software for simulating and optimizing the gate locations and hot runner diameters for a balanced fill (col. 1, lines 28-31) and the alternative use of "conventional mold fill analyses may be used to determine the appropriate sequencing of the gated nozzles to achieve the desired melt front advancement and fill balancing" (col. 8, lines 15-18). Yu (col. 1, lines 11-25 and col. 13, lines 28-44) teaches determining optimum gate locations and processing condition by performing simulation to analyze proposed shapes and injection points which can predict the location of weld lines and air traps. These analyses are used for the required determination of the injection mold pressure limits for the injection molding machine (col. 1, lines 18-23). Yu (col. 3, lines 1-18) discloses linking the flow analysis from the injection points and

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providing time steps which would be a time sequence. Friedl (see abstract, col. 1, lines 31-57 and col. 33, lines 29-32) teaches the determining of the number and location of the gates using a numerical analysis and the pressures for filling and packing. Yu discloses the prediction of weld lines (col. 1, lines 25), the plurality of injection points and the calculation time steps (col. 3, lines 1-17). Clearly the time sequence of the flow within the cavity is simulated from the plurality of gates. Friedl discloses modeling flows of different materials simultaneously or sequentially in the same mold (col. 33, lines 29-31) and thus is related to sequential flow. Friedl (col. 1, lines 31-57 and col. 5, line 28-col. 6, line 37) and Yu (col. 13, lines 12-43) each clearly use numerical analysis and computer-aided design. It would have been obvious to use the well known and conventional numerical flow analysis and optimization of either Yu or Friedl to determine the time sequence of the gates since these produce the desired flow within the mold cavity.

8. Norton (col. 1, lines 46-67) teaches the well known problems that are overcome by using time sequenced valve gates in injection molding for providing proper fill of the cavity and optimum clamp tonnage. Norton teaches the solving of the problems of fill balancing and clamp tonnage, such as having more fluid flow into a large area or mass and a smaller amount flow into the small area or mass. Also, Norton (col. 18, lines 5-57) describes many improvements obtained by fill balancing and clamp tonnage optimization. It would have been obvious to a person of ordinary skill in the art to use the flow analysis simulations of Yu or Friedl for determining the desired fill sequence and clamping force (pressure) since these are commonly optimized in the injection

molding process parameters. The clamping force used in the design of the molded product of Rebello during the computer aided optimization would have obviously included known numerical analysis of the stresses and strains during the simulation of known injection valving operations.

9. At least one valve gate being kept open at any given time during the filling stage is clearly obvious in the process of injection molding since no filling will occur with all the valve gates closed. Wilson (abstract), Yu et al. (col. 3, lines 1-17), Friedl et al. (col. 32, lines 36-45) and Norton (col. 2, lines 20-65) each teach the injection at multiple points and the flow of material during the filling stage.

Response to Arguments

10. Applicant's arguments filed June 19, 2008 have been fully considered but they are not persuasive.

11. Applicant argues that the references do not define a timing regulation gate. However, the timing of the gates is regulated by the control sequence for opening the multiple gates. At least one of the gates must be open for the filling stage to occur. Applicant argues that the references do not refer to the reduced mold clamping force. Rebello and Norton teach the control and determination of the clamping force. The clamping force is a well known parameter in injection molding and is controlled so as to avoid flash in the product and to reduce energy consumption of the electrical or hydraulic clamping cylinders during the process.

12. Tarr et al. has been cited for showing the know sequences and controls for opening and closing injection gate valves.

13. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

14.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jill L. Heitbrink whose telephone number is (571) 272-1199. The examiner can normally be reached on Monday-Friday 9 am -2 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Yogendra Gupta can be reached on (571) 272-1316. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jill L. Heitbrink/
Primary Examiner, Art Unit 1791

Jill L. Heitbrink
Primary Examiner
Art Unit 1791

jlh